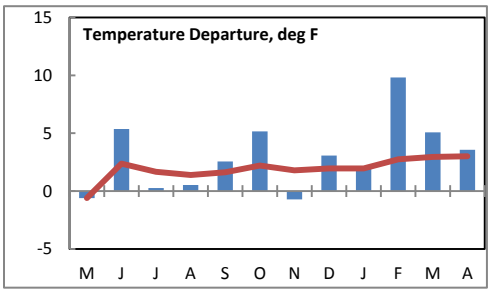
Montana Weather/Precipitation Summary

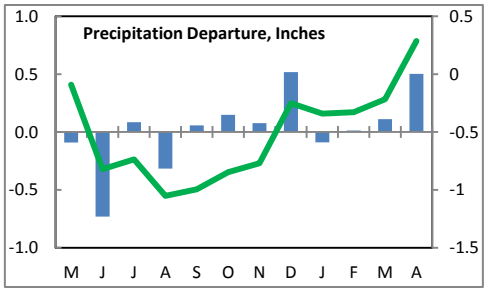
April 2016 NOAA's National Weather Service Great Falls Montana

During April, an upper level ridge was along the west coast, which brought general northwest flow to the state. The ridge was somewhat stronger than normal for April (Fig. 1). Temperatures were near normal in the northeast, and above normal elsewhere. Precipitation was variable with below normal west and south central and above normal elsewhere. April's winds were slightly below the long-term average.

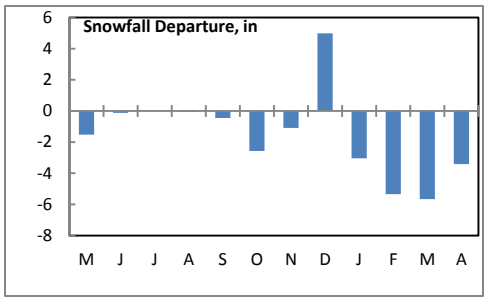
Statewide composite temperatures averaged 3.6°F above normal for the month. The red line on the graph to the right shows the cumulative 12-month departure from normal. The temperature anomalies ranged from -0.5°F at Plentywood to +7.4°F at Mullan Pass (Fig. 2). The warmest average monthly temperature was 54.9°F at Eureka, and the coolest was 33.1°F at Yellowmule (Gallatin). This was the 23rd warmest April, and the warmest since 1987. For the past 12-months, the statewide composite average temperature is 3.0°F above normal. Ten of the last 12 months and 18 of the past 24 months have had warmer than normal temperatures.



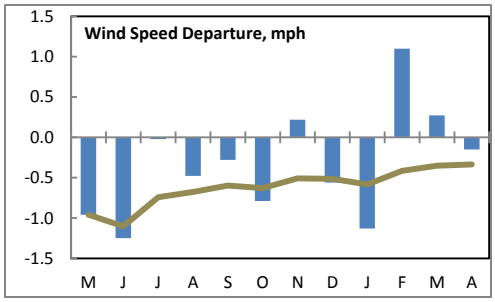
The monthly departure from normal for precipitation across Montana is shown in Figure 3. Precipitation amounts were variable. Below normal precipitation was common across the west and portions of the south central, while above normal precipitation fell elsewhere. The highest amount recorded was 5.62-inches at Ridgeway (Carter). Statewide, this month averaged 1.03", or 0.11" above normal. The statewide composite precipitation for the past 12 months is 0.58" below normal. The green line on the graph to the right shows the cumulative 12-month departure from normal. Six of the past 12 months have measured above normal precipitation.

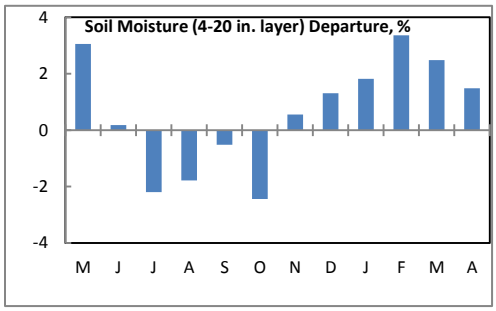


The winter's trend of lighter than normal snowfall continued in April. The monthly composite was 2.1", or 3.4-inches below normal (figure on right). This was the 23rd lightest April snowfall of record, and the smallest average since 2004. Over the past 12-months, the snowfall composite is 66% of normal the normal amount, but as noted above, precipitation is above normal. Only one of the past 12 months have had above normal snowfall.



The statewide average winds returned to lighter than normal in April, ranking as the 13th calmest April of record. The statewide composite average was 9.7 mph, 0.2 mph below normal. The brown line of the graph to the right shows the 12-month cumulative statewide wind departure from normal. The 12-month average is running 0.3-mph below average. Only three of the past 12 months have had above normal average speeds. The fastest average speed was 14.8 mph at Comertown. The fastest measured gust of the month, 82-mph, occurred at Deep Creek on the 6th, while gusts reached 71 mph near Ingomar.





Composite statewide soil moisture is above normal for April. The average of 24.8-percent is 1.5 points above the 20 year average of 23.3-percent. This April had the 5th highest value of record.

Refer to NEIC's State of the Climate report for the latest monthly discussion: http://www.ncdc.noaa.gov/sotc/.

April 1-13
In general, dry and warm conditions from March continued through early April. A cold front passing through the state produced thunderstorms across much of the southwest on the 4th. Strong winds associated with the front, and the additional push from weak thunderstorms caused gusts to reach 65 mph at Bozeman. This tied their highest gust of record for April. Additionally, record warm temperatures were recorded at Havre and Lewistown. As the front continued through the state, very strong winds prevailed in its wake. Gusts reached 70 mph near Grey Cliff (Sweet Grass) and 71 mph at Ingomar. A location south of Malta recorded a gust of 65 mph. Record warm temperatures were again felt across much of western and central Montana on the 8th and 9th.

April 14-22
An unsettled period brought the coolest temperatures of the month, along with heavy precipitation to many parts of the state. On the 14th, strong thunderstorms produced nearly one-inch sized hail at Miles City. Cooler conditions on the 15th and 16th, along with precipitation, brought heavy snow to the Rocky Mountains. Nearly 20-inches of snow fell at Mt Lockhart (Teton). Nearly 7-inches of snow fell at Great Falls. Meanwhile rain amounts up to and over two inches fell over the Hi-Line from Kremlin to Hinsdale. Another storm brushed southeast Montana on the 19th. Broadus recorded a foot of snow, while precipitation amounts over 1.50-inches were reported over much of southeastern Montana. Warmer conditions returned, with temperatures in the mid and upper 80s across southeastern Montana on the 22nd.

April 23-30
The last week of April was cooler than normal, with periods of precipitation. On the 23rd and 24th, heavy precipitation fell across many portions of the state. Lodge Grass reported 2.2-inches, Wilsall 1.40-inches, Savage 2.3-inches, and even 2.0-inches in Lake County. On the 24th, two separate thunderstorms produced a new precipitation record at Miles City. They recorded their heaviest precipitation in 30-minutes (0.75"), 1-hour (1.11"), 2-hrs (2.30") and 10-hrs (2.90"). In a 24-hour period, 2.91" fell, which was the most for the date, and for any 24-hour period at Miles City. By the 25th, five inches of snow fell at Roundup.

Precipitation/convection

Severe convective weather occurred on zero days in April, which is normal.

Water Year
The temperature was 34.8°F or 4.0°F above normal. This has been the warmest water year since 2000 and the 4th warmest of record.
The composite precipitation was 7.80-inches, 1.50" inches above normal. This was the 18th wettest water year to date, and the wettest since 2006.
Composite snowfall was 37.8" or 17.8" below normal. This is the lightest water year to date snowfall since 1992, and the 24th lightest of record.
Winds averaged 9.0 mph, the 15th calmest of record, and 0.2 mph below normal.

April summary information:

High Temperature	88°F at Roundup (22nd)	**Greatest Precip**	5.62" at Ridge
Low Temperature	1°F Elk Park (16th)		5.70" South Fork Shields SNOTEL
Warmest Ave Temp	54.9°F at Eureka	**Peak Wind Gust**	82 mph at Deep Creek RAWS (6th)
Coolest Ave Temp	33.1°F at Yellowmule		71 mph near Ingomar (6th)
Range of Temp departures	-0.5°F at Plentywood to +7.4° at Mullan Pass	**Highest Ave Wind**	15.6 mph at Livingston 20.0 mph at Deep Creek RAWS
21 city mean monthly Temperature/Normal	46.4/42.8F 3.6F above normal. 23rd warmest of record (since 1880). 83rd percentile. Oct-Apr 34.8/30.8 4.0F above normal. 4th warmest of record.	**20 city mean monthly wind speed/Normal**	9.7 mph/9.9 mph; 23rd calmest of record (since 1936). 29th percentile. Oct-Apr 9.0 mph/9.2 0.2-mph below normal. 15th calmest of record.
22 city mean monthly precipitation/Normal	2.02"/1.52" – 133% of normal. 4th wettest of record (since 1880). 97th percentile. Oct-Apr 7.80"/6.50" - 1.30" above normal. 18th wettest of record.		

Historical Rank of Precipitation (inches)
for the Current Month and Water Year to Date

Location	Apr	% of Norm	Rank	Pcntl	Oct 1 – Apr 30	% of norm	Rank	Pcntl	Years
Baker	2.85	318%			5.06	127%			18
Billings	1.28	74%	45	38	5.81	84%	49	42	115
Belgrade	0.84	53%	48	59	5.24	89%	38	47	79
Butte	1.16	99%	36	29	4.82	102%	56	45	122
Cut Bank	1.64	210%	11	9	4.31	160%	18	16	109
Dillon	1.13	106%	25	32	3.80	110%	23	29	76
Glasgow	2.61	307%	4	3	6.73	195%	9	7	116
Great Falls	2.83	199%	6	4	9.08	171%	6	4	124
Havre	3.55	423%	2	1	6.34	186%	9	6	136
Helena	1.01	103%	42	30	3.37	89%	99	72	137
Jordan	2.33	216%			7.90	216%			18
Kalispell	1.58	127%	17	13	9.22	107%	44	36	122
Lewistown	1.51	107%	40	33	5.90	100%	62	51	120
Livingston	1.18	67%	58	49	6.69	112%	35	30	113
Miles City	4.36	318%	1	1	6.69	162%	18	12	139
Missoula	1.34	111%	33	23	6.67	100%	69	51	135
Mullan Pass	1.45	48%	57	76	37.67	132%	11	14	75
Wolf Point	2.31	246%			4.95	145%			18
Glendive	2.81	220%	8	6	4.78	107%	42	36	116
Sidney	3.83	365%	78	101	5.87	129%	13	16	76
BZN-MSU	2.08	90%	48	34	10.01	110%	25	18	137

Rankings and Percentiles are 1=driest, higher numbers=wetter.
For an automated version of this chart, updated daily, go to
http://www.wrh.noaa.gov/tfx/dx.php?wfo=tfx&type=&loc=products&fx=PCPNTOTALS

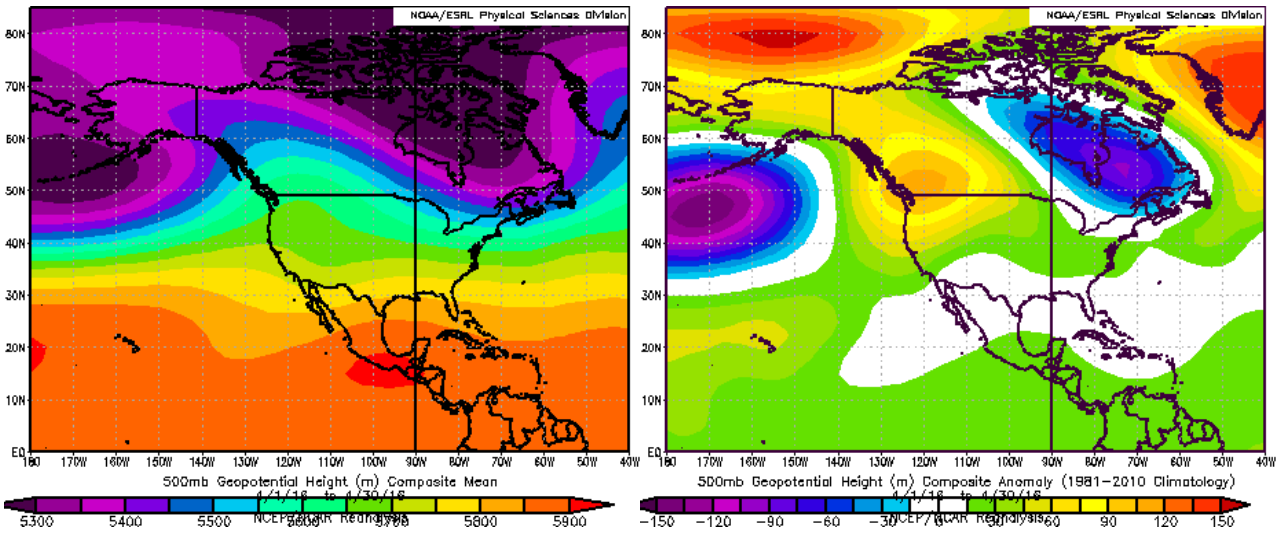


Figure 1. Mean flow at 500 millibars (~18,000 ft) for this month (left) and departure from normal (right).

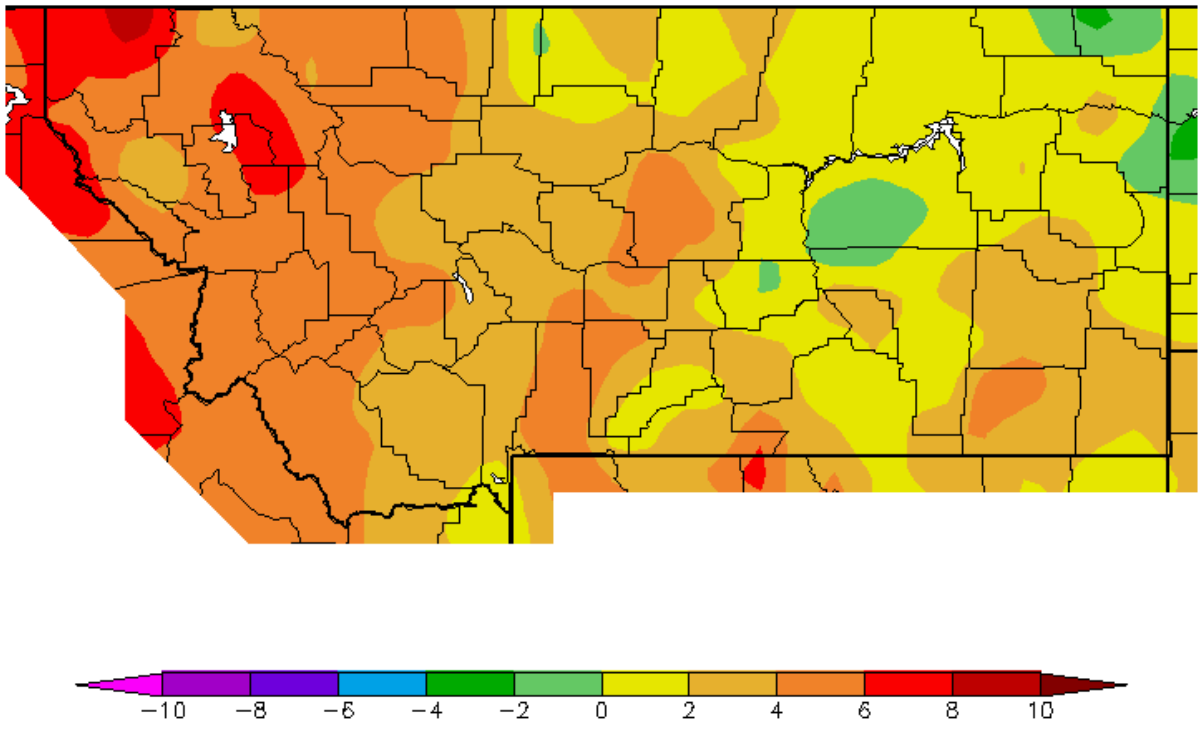


Figure 2. April 2016 temperature departures from normal (°F) (Western Region Climate Center).

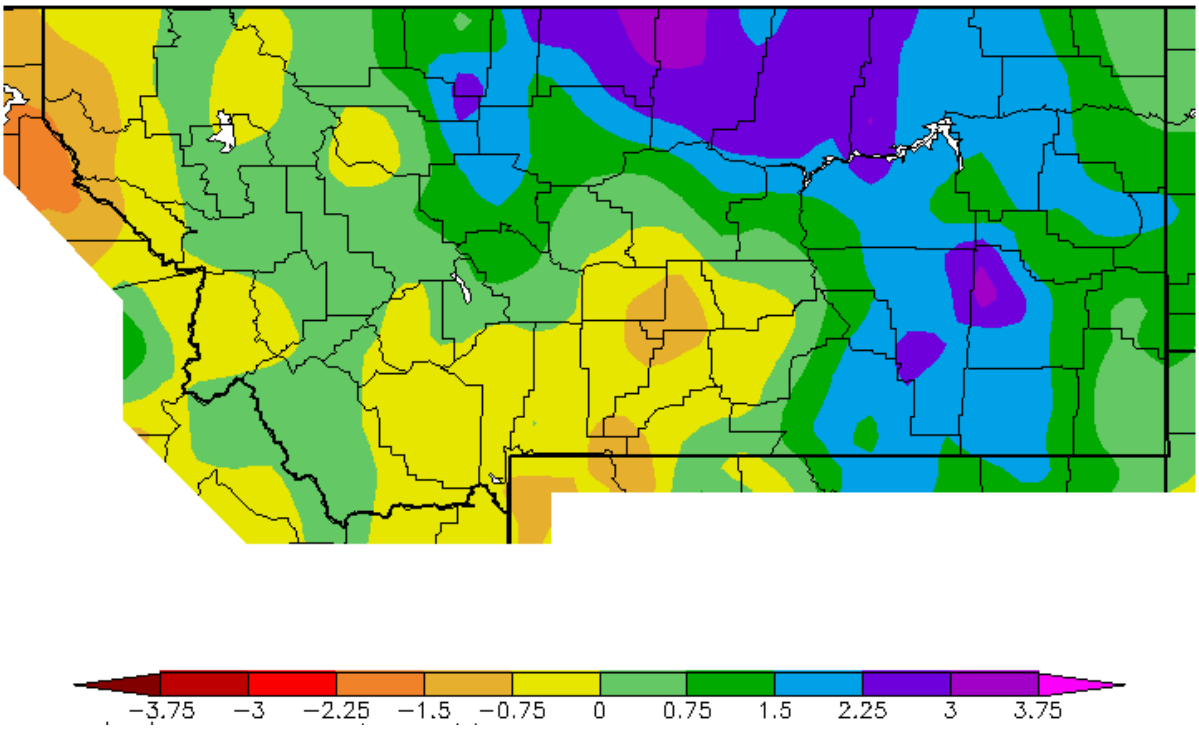


Figure 3. April 2016 precipitation departures from normal (percent) (Western Region Climate Center).

For a state map of % of normal water year precipitation (updated around the 7th of each month), go to: http://www.wrh.noaa.gov/tfx/climate/monthlysum/climatesum.php?wfo=tfx

For the latest information on mountain snowpack from the NRCS, go to: http://www3.wcc.nrcs.usda.gov/snow/index.html

For the latest U.S. Drought Monitor, issued weekly by the National Drought Mitigation Center, USDA and NOAA, go to: http://droughtmonitor.unl.edu/

These data are preliminary and have not undergone final QC by NEIC. Therefore, these data are subject to revision. Final and certified climate data can be access at the National Environmental Information Center (NEIC) http://www.ncdc.noaa.gov. Many more links are on the Drought Information Page of the NWS Great Falls web site at http://www.wrh.noaa.gov/tfx/main/drought.php?wfo=tfx. The climatological record for normals is 1981-2010. The ranking period for temperature, precipitation and snowfall is since 1880. The ranking period for wind speeds is since 1936. The ranking period for soil moisture is since 1995.